☑ 005/016

Docket No.: 333772000900
(PATENT)

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Ankan PRAMANICK et al.

Application No.: 10/772,327

Confirmation No.: 4514

Filed: February 6, 2004

Art Unit: 2863

For:  METHOD AND APPARATUS FOR TESTING
INTEGRATED CIRCUITS

Examiner: S. Kundu

## APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on July 25, 2006, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205:

|  |  |
|---|---|
| I. | Real Party In Interest |
| II | Related Appeals and Interferences |
| III. | Status of Claims |
| IV. | Status of Amendments |
| V. | Summary of Claimed Subject Matter |
| VI. | Grounds of Rejection to be Reviewed on Appeal |

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**FROM:** Thomas Chan  **DATE:** September 25, 2006

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**Comments:**

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|---|---|
| Attorney Docket No.: | 333772000900 |
| Group Art Unit: | 2863 |
| Examiner: | S. Kundu |
| Serial No.: | 10/772,327 |
| Filing Date: | February 6, 2004 |
| Inventors: | Ankan PRAMANICK et al. |
| Title: | METHOD AND APPARATUS FOR TESTING INTEGRATED CIRCUITS |

Papers enclosed herewith:
1. Transmittal - 1 page
2. Fee Transmittal + duplicate copy for fee processing - 2 pages
3. Appeal Brief including Appendix A - 12 pages

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| TRANSMITTAL FORM | | |
|---|---|---|
| **Application Number** | 10/772,327 | |
| **Filing Date** | February 6, 2004 | |
| **First Named Inventor** | Ankan PRAMANICK | |
| **Art Unit** | 2863 | |
| **Examiner Name** | S. Kundu | |

*(to be used for all correspondence after initial filing)*

| Total Number of Pages in This Submission | 15 | **Attorney Docket Number** | 333772000900 |
|---|---|---|---|

## ENCLOSURES (Check all that apply)

[x] Fee Transmittal Form + duplicate copy for fee processing - 2 pages

[ ] Fee Attached

[ ] Amendment/Reply

[ ] After Final

[ ] Affidavits/declaration(s)

[ ] Extension of Time Request

[ ] Express Abandonment Request

[ ] Information Disclosure Statement

[ ] Certified Copy of Priority Document(s)

[ ] Reply to Missing Parts/Incomplete Application

[ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53

[ ] Drawing(s)

[ ] Licensing-related Papers

[ ] Petition

[ ] Petition to Convert to a Provisional Application

[ ] Power of Attorney, Revocation Change of Correspondence Address

[ ] Terminal Disclaimer

[ ] Request for Refund

[ ] CD, Number of CD(s) _____

[ ] Landscape Table on CD

Remarks

[ ] After Allowance Communication to TC

[ ] Appeal Communication to Board of Appeals and Interferences

[x] Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) including Appendix A - 12 pages

[ ] Proprietary Information

[ ] Status Letter

[x] Other Enclosure(s) (please identify below):

Facsimile Cover Sheet

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

| Firm Name | MORRISON & FOERSTER LLP | (Customer No. 25226) |
|---|---|---|
| Signature | | |
| Printed name | Thomas Chan | |
| Date | September 25, 2006 | Reg. No. 51,543 |

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted by facsimile to the Patent and Trademark Office, facsimile no. (571) 273-8300, on the date shown below.

Dated: September 25, 2006    Signature: _Sheena Hicks_    (Sheena Hicks)

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PTO/SB/17 (01-06)
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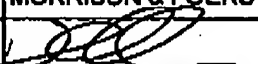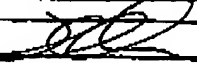U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

# FEE TRANSMITTAL
## For FY 2006

| Complete if Known | |
|---|---|
| Application Number | 10/772,327 |
| Filing Date | February 6, 2004 |
| First Named Inventor | Ankan PRAMANICK |
| Examiner Name | S. Kundu |
| Art Unit | 2863 |

☐ Applicant claims small entity status. See 37 CFR 1.27

| TOTAL AMOUNT OF PAYMENT | ($) 500.00 | Attorney Docket No. | 333772000900 |
|---|---|---|---|

## METHOD OF PAYMENT (check all that apply)

☐ Check  ☐ Credit Card  ☐ Money Order  ☐ None  ☐ Other (please identify):

☒ Deposit Account  Deposit Account Number: 03-1952  Deposit Account Name: Morrison & Foerster LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below  ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17  ☒ Credit any overpayments

## FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)

### 1. BASIC FILING, SEARCH, AND EXAMINATION FEES

| | FILING FEES | | SEARCH FEES | | EXAMINATION FEES | | |
|---|---|---|---|---|---|---|---|
| Application Type | Fee ($) | Small Entity Fee ($) | Fee ($) | Small Entity Fee ($) | Fee ($) | Small Entity Fee ($) | Fees Paid ($) |
| Utility | 300 | 150 | 500 | 250 | 200 | 100 | 0.00 |
| Design | 200 | 100 | 100 | 50 | 130 | 65 | 0.00 |
| Plant | 200 | 100 | 300 | 150 | 160 | 80 | 0.00 |
| Reissue | 300 | 150 | 500 | 250 | 600 | 300 | 0.00 |
| Provisional | 200 | 100 | 0 | 0 | 0 | 0 | 0.00 |

### 2. EXCESS CLAIM FEES

| Fee Description | Fee ($) | Small Entity Fee ($) |
|---|---|---|
| Each claim over 20 (including Reissues) | 50 | 25 |
| Each independent claim over 3 (including Reissues) | 200 | 100 |
| Multiple dependent claims | 360 | 180 |

| Total Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| 24 - 24 = | 0 | x 50.00 = | 0.00 |

HP = Highest number of total claims paid for, if greater than 20.

| Indep. Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| 1 - 3 = | 0 | x 200.00 = | 0.00 |

HP = Highest number of independent claims paid for, if greater than 3.

| Multiple Dependent Claims | |
|---|---|
| Fee ($) | Fee Paid ($) |
| 360.00 | 0.00 |

### 3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

| Total Sheets | Extra Sheets | Number of each additional 50 or fraction thereof | Fee ($) | Fee Paid ($) |
|---|---|---|---|---|
| - 100 = | /50 | (round up to a whole number) x | 250.00 = | 0.00 |

### 4. OTHER FEE(S)

Non-English Specification, $130 fee (no small entity discount)

Other (e.g., late filing surcharge): 1402 Filing a brief in support of an appeal

Fees Paid ($)

500.00

## SUBMITTED BY

| Signature | | Registration No. (Attorney/Agent) | 51,543 | Telephone | (650) 813-5616 |
|---|---|---|---|---|---|
| Name (Print/Type) | Thomas Chan | | | Date | September 25, 2006 |

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## I.    REAL PARTY IN INTEREST

The real party in interest for this appeal is:

Advantest Corporation, a corporation duly organized under and pursuant to the laws of Japan, with a principal place of business at 1-32-1 Asohi-cho, Nerima-ku, Tokyo 179-0071, Japan.

## II.    RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no known related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III.    STATUS OF CLAIMS

A.    Total Number of Claims in Application

There are 24 claims pending in application.

B.    Current Status of Claims

1.    Claims canceled:  0

2.    Claims withdrawn from consideration but not canceled:  0

3.    Claims pending:  1-24

4.    Claims allowed:  0

5.    Claims rejected:  1-24

C.    Claims On Appeal

The claims on appeal are claims 1-24.

## IV.    STATUS OF AMENDMENTS

Subsequent to the Final Office Action mailed on April 25, 2006, no Amendment under 37 C.F.R. 1.116 was made in the response to the Final Office Action filed on June 14, 2006. An

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Advisory Action was mailed June 28, 2006 indicating that the request for reconsideration had been considered but did not place the application in condition for allowance.

## V.    SUMMARY OF CLAIMED SUBJECT MATTER

The claimed inventions are directed to a distributed operating system for a semiconductor test system. An embodiment of the invention comprises a host operating system for enabling control of at least one site controller by a system controller and at least one local operating system associated with each site controller for enabling control of at least one test module by an associated site controller. At least one test module performs testing on a corresponding DUT. (Figure 2, paragraphs [0036] and [0037].) The distributed operating system permits the use of third party modules. The hardware and software framework of the test system includes standard interfaces with which modules from different vendors may interact in a plug-and-play manner. (Figures 2 and 8, paragraphs [0009] and [0013-0015].)

## VI.    GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A.  Whether claims 1-5 are anticipated under 35 U.S.C. 102(b) by U.S. Patent No. 6,028,439 (the Arkin reference).

B.  Whether claims 6-8, 24 are unpatentable under 35 U.S.C. 103(a) over the Arkin reference in view of US 2002/0183955 A1 (the Adler reference).

C.  Whether claims 9-14, 19 are unpatentable under 35 U.S.C. 103(a) over the Arkin and Adler, and further in view of US 2003/0167277 A1 (the Hejlsberg reference).

D.  Whether claims 15-18, 21-23 are unpatentable under 35 U.S.C. 103(a) over the Arkin reference.

E.  Whether claim 20 is unpatentable under 35 U.S.C. 103(a) over the Arkin, Adler, and Hejlsberg, and further in view of US Patent No. 6,782,336 (the Shah reference).

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## VII.   ARGUMENT

Claims 1-24 were rejected by the Examiner in a Final Office Action mailed on April 25, 2006. Applicants respectfully request reversal of the rejection of these claims in view of the following remarks.

### A.  Claims 1-5 are patentable over the Arkin reference

**The Arkin Reference Fails to Disclose the System Structure Required by Claim 1**

Applicants respectfully submit that the Arkin reference does not disclose the structure of **System Controller-Site Controller(s)-Test Module(s)-DUT(s)** of the present invention, which is distinguished from the structure of **System Controller-Tester Module(s)-DUT(s)** disclosed by the Arkin reference (see depictions of the respective structure below). Thus, the Arkin reference fails to disclose each and every element of the pending independent claim 1.



Present Invention

Current DUT
can be removed
from tester and
be replaced with
a next DUT
(C6:2-4)

```
┌──────────────┐              ┌──────────────┐    ┌─ ─ ─ ─ ─ ─ ─┐
│   System     │◄───────────►│    Tester     │◄──►│   Device     │
│  Controller  │              │   Module(s)   │    │  Under Test  │
└──────────────┘              └──────────────┘    │    (DUT)      │
                                                   └ ─ ─ ─ ─ ─ ─ ─┘
```
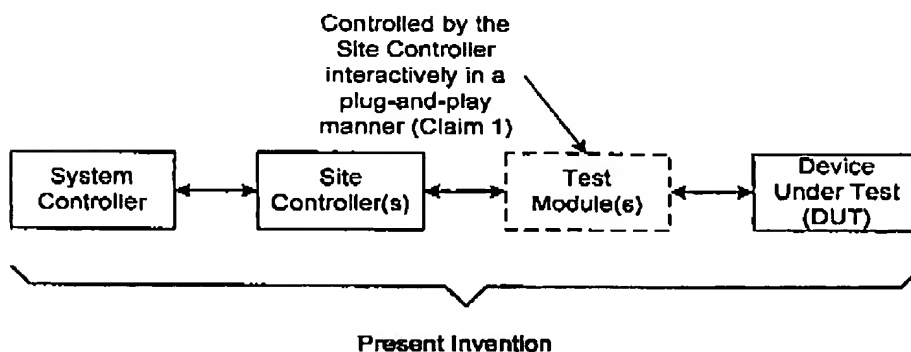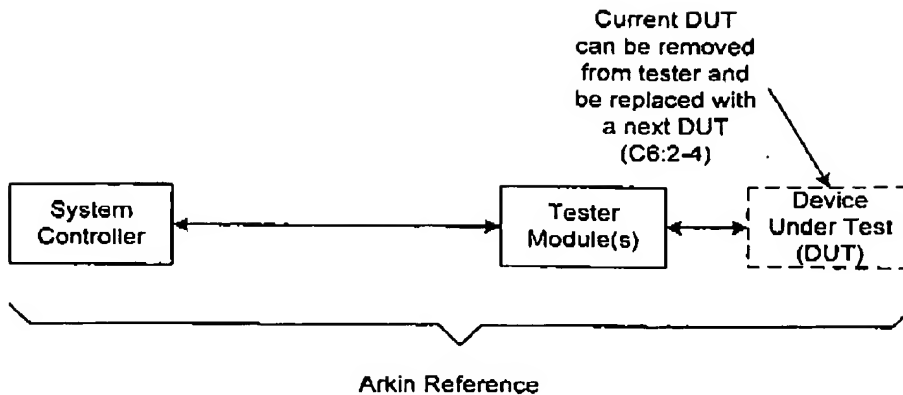
Arkin Reference

To address this distinction, Applicants respectfully request the Examiner to response in the Examiner's Answer: 1) which element in the Arkin reference discloses the system controller of claim 1; 2) which element in the Arkin reference discloses the site controller of claim 1; 3) which element in the Arkin reference discloses the test module of claim 1; and 4) which element in the Arkin reference discloses the DUT of claim 1.

Applicants have initially brought this distinction to the attention of the Examiner in the amendment after Final filed on December 5, 2005, then in the phone interview and in the amendment to the Non-final Office Action (note RCE filed on December 22, 2005) on April 13, 2006, and finally in the June 14, 2006 response to the Final Office Action. Applicants believe that it is essential to address this distinction before one can appreciate the claim limitation that "wherein the associated site controller controls at least one test module interactively with the associated site controller in a plug-and-play manner," which will be discussed in detail below.

**The Site Controller (if it exists at all) of the Arkin Reference Cannot Control the Test Module in a Plug-and-Play Manner**

The Examiner stated in the Advisory Action that "The Arkin reference teaches a test module which is interactive with the site controller and it is in a plug-and-play manner with the DUT" and "if applicant would amend the claim so that the site controller itself is used in a plug-

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and-play manner interactively with the test module; this would overcome the prior art of record."
(emphasis added) Applicants were surprised by the above statements because Applicants have
discussed this issue with the Examiners on the April 13, 2006 interview and have followed the exact
suggestion by the Examiners to clarify this issue in the April 13, 2006 response to the non-final
Office Action by making the following amendment to claim 1 of the pending application: "wherein
the associated site controller controls at least one test module interactively <u>with the associated site
controller</u> in a plug-and-play manner."

      Based on the Examiner's statements in the Advisory Action, disagreements still exist
between the Applicants and the Examiner regarding the meaning of the term "plug-and-play"
according to the present invention. From the first statement, the Examiner seems to suggest the
Arkin reference teaches a test module that can be attached/detached from the test system. This is
clearly not what the Arkin reference teaches. From the second statement, the Examiner seems to
suggest the site controller of the present invention can be attached/detached from the test system.
This is clearly not what the present invention teaches or claims.

      To better understand this issue, let's consider the statement "a computer controls a
digital camera interactively in a plug-and-play manner" as an example. A person skilled in the art
would understand this statement to mean it is the digital camera that can be attached/detached from
the computer. Therefore, the site controller controls a test module interactively in a plug-and-play
manner as claimed in the present invention means the test module can be attached/detached from the
site controller (and therefore the test system). The Arkin reference clearly does not disclose this
feature of the present invention. Applicants respectfully request the Examiner to response in the
Examiner's Answer the question how does the site controller as disclosed in the Arkin reference
controls the test module in a plug-and-play manner. Applicants submit that even if the Examiner
identifies the Micro-controller (30) in Figure 2 of Arkin as the site controller, the Arkin reference
fails to disclose the software and hardware infrastructure that can support attaching/detaching the
rest of the logic blocks in Figure 2 from the Micro-controller (30) in a plug-and-play manner. In
addition, Applicants submit that Figure 2 is the test module circuit board shown in Figure 1. A

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person skilled in the art would not consider attaching/detaching logic components from the same circuit board practical in reality.

The Examiner has relied on the disclosure of the Arkin reference that a DUT can be removed and replaced with a next DUT as allegedly anticipates a test module that can be detached/attached from the site controller and the test system (i.e. the capability of a site controller controlling a test module interactively in a plug-and-play manner). In fact, the Arkin reference is silent about whether the test module can be removed or replaced. It is a fact that a DUT is different from a test module according to both the present application and the Arkin reference. Therefore, the Arkin reference fails to disclose at least the element "wherein the associated site controller controls at least one test module interactively with the associated site controller in a plug-and-play manner" of the independent claim 1 of the pending application.

Therefore, for at least the reasons presented above, Applicants assert that claim 1 is allowable over the Arkin reference. Applicants also assert that claims 2-24, which variously depend from independent claim 1, are allowable for at least the reason that they depend from an allowable independent claim.

### B. Claims 6-8 and 24 are patentable over the combination of the Arkin and Adler references

Applicants assert that claims 6-8 and 24 are allowable for at least the reason that they depend from an allowable independent claim.

### C. Claims 9-14 and 19 are patentable over the combination of the Arkin, Adler, and Hejlsberg references

Applicants assert that claims 9-14 and 19 are allowable for at least the reason that they depend from an allowable independent claim.

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### D. Claims 15-18 and 21-23 are patentable over the Arkin reference

Applicants assert that claims 15-18 and 21-23 are allowable for at least the reason that they depend from an allowable independent claim.

### E. Claim 20 is patentable over the combination of the Arkin, Adler, Hejlsberg, and Shah references

Applicants assert that claim 20 is allowable for at least the reason that it depends from an allowable independent claim.

## VIII.   CLAIMS APPENDIX

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, the claims in Appendix A do include the amendments filed by Applicant on April 13, 2006.

## IX.   EVIDENCE APPENDIX

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted.

## X.   RELATED PROCEEDINGS APPENDIX

No related proceedings are referenced in II above, or copies of decisions in related proceedings are not provided, hence no Appendix is included.

Dated: September 25, 2006                    Respectfully submitted,

                                             By
                                             Thomas Chan
                                               Registration No.: 51,543
                                             MORRISON & FOERSTER LLP
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## APPENDIX A

**Claims Involved in the Appeal of Application Serial No. 10/772,327:**

Claim 1 (Presently presented): A distributed operating system for a semiconductor test system for testing at least one device under test (DUT), the operating system comprising:

a host operating system for enabling control of at least one site controller by a system controller, wherein the at least one site controller does not share a common clock; and

at least one local operating system associated with each site controller for enabling control of at least one test module by an associated site controller,

wherein the associated site controller controls at least one test module interactively with the associated site controller in a plug-and-play manner, and

wherein at least one test module performs testing on a corresponding DUT.

Claim 2 (Original): The distributed operating system of claim 1, wherein the host operating system synchronizes operation of the at least one site controller.

Claim 3 (Original): The distributed operating system of claim 1, wherein the host operating system arbitrates communication between the system controller and the at least one site controller.

Claim 4 (Original): The distributed operating system of claim 1, wherein the system controller monitors operation of the at least one site controller.

Claim 5 (Original): The distributed operating system of claim 1, wherein a site controller monitors operation of the at least one test module associated with the site controller.

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Claim 6 (Original): The distributed operating system of claim 1, wherein the host operating system comprises at least one host interface for communicating with the at least one site controller.

Claim 7 (Original): The distributed operating system of claim 6, the at least one host interface for communicating with at least one test module associated with a site controller.

Claim 8 (Original): The distributed operating system of claim 1, further comprising a test module interface for defining test module functions for interfacing a site controller to a first test module, wherein the test module interface is extensible to interface the site controller to a second test module, the unextended test module interface being insufficient for interfacing the site controller to the second test module.

Claim 9 (Original): The distributed operating system of claim 1, wherein the host operating system includes at least one host framework class.

Claim 10 (Original): The distributed operating system of claim 9, wherein the at least one host framework class is developed in a standard computer language to enable a user to develop application specific classes for controlling the at least one site controller.

Claim 11 (Original): The distributed operating system of claim 10, wherein the standard computer language is C or C++

Claim 12 (Original): The distributed operating system of claim 1, wherein each local operating system includes at least one local framework class.

Claim 13 (Original): The distributed operating system of claim 12, wherein the at least one local framework class is developed in a standard computer language to enable a user to develop application specific classes for controlling the at least one test module.

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Claim 14 (Original):  The distributed operating system of claim 13, wherein the standard computer language is C or C++.

Claim 15 (Original):  The distributed operating system of claim 1, wherein the number of modules controlled by each site controller is scalable.

Claim 16 (Original):  The distributed operating system of claim 1, wherein the local operating system associated with a corresponding site controller enables the type of test modules controlled by the site controller to be reconfigured.

Claim 17 (Original):  The distributed operating system of claim 1, wherein the host operating system enables the number of site controllers controlled by the system controller to be scalable.

Claim 18 (Original):  The distributed operating system of claim 1, wherein the host operating system enables the number of DUTs tested by the testing system to be scalable.

Claim 19 (Original):  The distributed operating system of claim 1, wherein the at least one test module comprises hardware and/or software.

Claim 20 (Original):  The distributed operating system of claim 1, further comprising an emulator for simulating the usage of a candidate test module with the test system to verify the candidate module as compatible with the test system.

Claim 21 (Original):  The distributed operating system of claim 1, wherein a first set of modules at a first test site is configured differently than a second set of modules at a second test site.

Claim 22 (Original):  The distributed operating system of claim 1, a first test site having a first configuration to test a first DUT, and a second test site having a second configuration to test a second DUT, wherein the first and second test sites are reconfigurable to form together a third test site to instead test a third DUT.

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Claim 23 (Original): The distributed operating system of claim 1, wherein a first module at a first test site can access a second module at a second test site.

Claim 24 (Original): The distributed operating system of claim 1, further comprising a communications library having a predetermined set of functions and interfaces for use with test modules.